The American FERTILIZER

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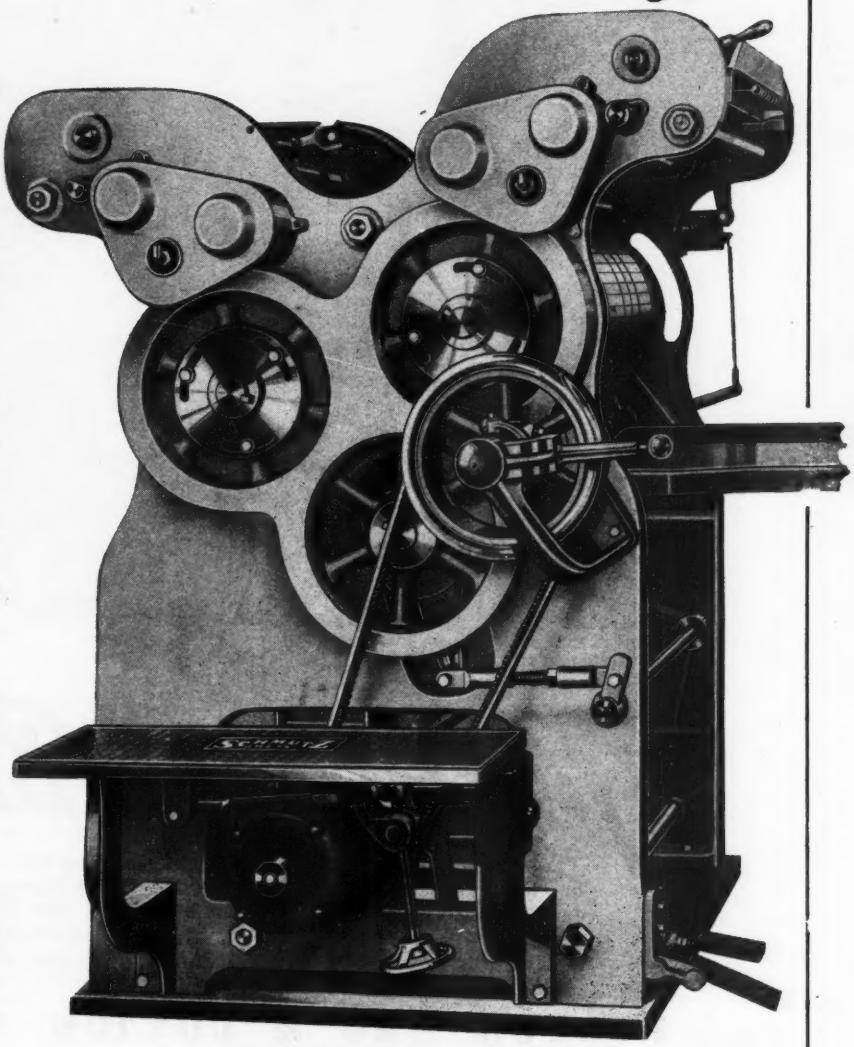

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The American FERTILIZER

Vol. 107 DECEMBER 27, 1947 No. 13

Congressional Hearing Reviews Fertilizer Situation

House Subcommittee Hears Industry Leaders Comment on Fertilizer Shortages and Measures Being Taken to Remedy Situation

THE Subcommittee on Fertilizer of the House Committee on Agriculture held an extensive hearing on the fertilizer situation, beginning on December 9th. The committee was composed of Representatives Anton J. Johnson, Ill., chairman; Chester H. Gross, Penna.; Charles B. Hoeven, Iowa; Reid F. Murray, Wis.; Harold D. Cooley, N. C.; Thomas G. Abernethy, Miss.; George M. Grant, Ala. The hearings continued for a week, with testimony from many fertilizer manufacturers, state agricultural departments, and railroad officials. At the conclusion of the final session, Chairman Johnson stated that his committee would make no recommendations when it reports to the full committee but would merely review the progress made since his group previously investigated the question last January.

The "investigation" was different from the general run of Congressional hearings. There was nothing hostile about this one, nor was there any criticism to speak of. More than anything else, it was simply a question and answer session to bring the Congressmen up to date on the available supplies of fertilizer. It was a fine evidence of interest on the part of the Representatives, and of cooperation on the part of the industry.

Ralph B. Douglass, vice-president of the Smith-Douglass Co., Inc., Norfolk, Va., testifying on December 9th for the American Plant Food Council, said that 1947–48 plant food supplies "will reach new all-time peaks," with present indications pointing to "about four per cent more nitrogen, five per cent more potash and six per cent more phosphate compared with last year."

"Despite the anticipated increases and the fact that this year farmers will have about two and one-half times more fertilizer than the prewar average, supplies will not be sufficient to meet all farmers desires everywhere," Mr. Douglass added.

He warned that "the transportation situation may hamper production to some extent during the current year," commenting that the shortage of box cars has already interfered with the normal movement of phosphate and potash. He said also that fertilizer production estimates for 1947–48 do not take into consideration "labor troubles."

Douglass Cites Building Program

Since January 31, 1947 when the House Sub-committee was informed that 65 new fertilizer plants were being built with major additions being made to 44 existing plants, Mr. Douglass reported that "about a dozen more new plants have been announced in the trade press and publications with approximately an equal number of plant expansions either projected or being worked on as rapidly as building materials, steel and equipment can be secured." He added that "about three-fourths of these new facilities are being constructed to serve the midwest and western regions where the use of chemical fertilizers

has increased so greatly during the war and postwar periods."

He said that "the fertilizer industry and new private capital are making every effort to expand facilities to meet the new demands, particularly in the new areas."

Horace M. Albright, president of the U. S. Potash Company, New York City, reported that the nation-wide shortage of box cars "is a limiting factor" seriously affecting deliveries of plant food materials for American farmers.

"Convincing proof of how the box car shortage is delaying deliveries of potash, one of the major plant foods, is revealed by the fact that our own company has approximately 760 carloads of material in storage," he emphasized, adding that "any increase in output can only augment this difficulty until box car supplies are more nearly adequate."

Albright Predicts More Potash

"Even this year," he said, "it is probable that manure salts production was curtailed to some extent by lack of shipping facilities as at the height of the box car shortage storage facilities were taxed to capacity."

Notwithstanding transportation difficulties, Mr. Albright testified that the potash industry has plans underway for plant expansions, "the effects of which should be felt during the 1948–49 season."

"Projecting proposed increases (of potash) into the fiscal year 1948–49, production expansions now planned and provided for should establish a production rate of some 1,120,000 tons of K_2O, an increase of 120,000 or better than 10 per cent over the expected output of the current fiscal year 1947–48," he added.

Viewing production for the current season, Mr. Albright said "it is encouraging to note that the (potash) deliveries to American chemical and agricultural industry during the first six months of 1947 exceeded those in 1946 by approximately 57,375 tons of K_2O—an increase of slightly over 12 per cent," adding that "it is to be expected that this increase will continue until the end of the year, indicating an annual increase of at least 10 per cent."

He testified that "the current expansion in production is designed as the potash industry's response to the Government's demands for an expanded food production and for fertilizers wherewith to produce it."

Concerning the phosphate rock situation, Charles E. Heinrichs, Manager of the Phosphate Mining Department, Virginia-Carolina Chemical Corporation, stated that the production of phosphates has met and exceeded all predictions and further expansion of production is proceeding, even under adverse conditions, at an amazing rate.

Phosphates Ample, Says Heinrichs

"With five months of the 1947–48 fertilizer year already behind us," said Mr. Heinrichs, "it is apparent that the production of phosphate rock in Florida alone for the year will equal and possibly even exceed 6,000,000 gross tons. The production of the entire country, including Florida, Tennessee and the Western field, is expected to be in the neighborhood of 8,000,000 tons with the possibility of reaching 8,500,000 gross tons. With new construction already completed or nearing completion it is now estimated that the production capacity of the industry for the year 1948–49 will have been brought to the level of more than 10,000,000 tons. Of this total the expanded capacity of the Florida field alone will be between 8,000,000 and 8,500,000 tons. This national production should be ample to meet all requirements in the United States and at the same time leave a substantial tonnage available for export."

With regard to superphosphate production, Mr. Heinrichs said, "In view of the greatly expanded rock production, increased acid supply and construction of new superphosphate plants, it is now considered likely that the production of superphosphates of all types will exceed 10,000,000 tons in the year 1947–48 and should reach a total of well over 11,000,000 tons in the year 1948–49."

Lockwood Expects Larger Tonnage

Maurice H. Lockwood, president of the National Fertilizer Association, made the prediction that, barring major unpredictable road blocks such as a transport tie-up, labor stoppage or further diversion of supplies to export markets, an estimated 18,000,000 tons of fertilizers will be processed and distributed within the United States and its possessions during 1948. This is 1,500,000 tons more than the 1946–47 all-time record volume of 16,500,000 tons.

The industry is in a position to increase this volume about 1,000,000 tons yearly reaching a total of 20,000,000 tons in 1950.

Actually, however, the fertilizer industry has a 20,000,000-ton production capacity now but three bottlenecks are limiting full use of this capacity.

1. Increased export allocations and a possible additional increase in nitrogen exports.

2. An acute shortage of box cars and tank cars is preventing distribution from keeping

(Continued on page 22)

Getting Fertilizer Facts to The Public*

By L. R. NEEL

Editor, Southern Agriculturist

AGRICULTURE is a business of many units (and we hope that it will continue that way). The typical farmer has a many-sided life, dividing his time between the fields, work at the barn, selling and delivering his products and getting in his supplies. If he is to be intelligent about his business, he must have a working knowledge of many things. These include a knowledge of machinery and its use, livestock and its care, of crops and their production, of insects and plant diseases, farm construction, and most fundamentally of all, a knowledge of the soil, its care and its treatment for successful crop production.

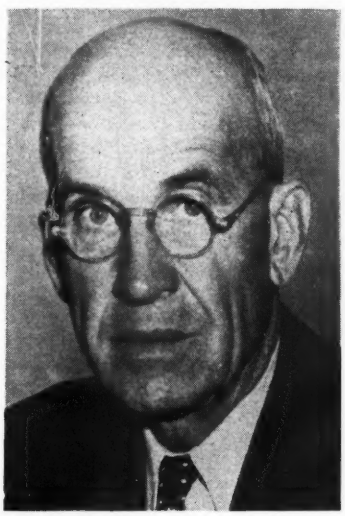
At this time it is our task to discuss briefly the getting of facts about commercial plant food and its use to him in a way that he will understand it. Not only is it good business for us to do this, but it will make a contribution in helping to feed a hungry world bountifully.

How Shall Man Eat?

About a quarter century ago East got out a thought provoking book, *Mankind at The Cross Roads*. The author came to the conclusion that the human population of the world doubled in the century beginning soon after 1820 and ending soon after 1920. That was a century of rapid world development and of rapid exploitation of natural resources. Most of the fertile lands of North and South America, South Africa, Australia and New Zealand were brought into use. As he stated, all of the best lands of the world had been put into production. Only the lands that needed irrigation, those that needed drainage and those that had been regarded as too infertile for profitable production were left. The question that he asked is, how can the world continue to increase in population at an important rate and still have enough food?

Different things have taken place that cause us to view the future with less forebodings than Mr. East had. In crops, better varieties and hybrids have boosted production. Improvements in livestock and in livestock management have resulted in more efficient production of human food. But most important has been the increasing of crop yield from better methods.

The use of commercial fertilizers materially added to the food supply of the world the latter half of the century that Mr. East studied. But it is in the period following World War I that such rapid strides were made in developing new fertilizing materials. In the past dozen years the farmers of this country increased their use of plant food by a hundred per cent. This made possible the bumper crops during those crucial years of the last world conflict.



L. R. Neel

Commercial Plant Food, a World Necessity

The population that Mr. East found on this globe in the early part of 1920 cannot be well fed for any length of time without continuous use of commercial plant food. And if the population is to increase and if the level of living even in a considerable portion of the world is to be raised, the use of commercial plant food will have to be increased.

Soil conservation and crop feeding is the most complex job that the farmer has to deal

*An address to the Fall Meeting of The National Fertilizer Association, Atlanta, Ga., November 12, 1947

with. So it is important that commercial plant food be used as intelligently as possible.

It is not enough that the farmer use a fertilizer that gives a profit. That is too easy at a time like this when agricultural prices are at the all time highest and when commercial fertilizer is the cheapest important item that has to be bought for the farm. The farmer should use the most economical form that he can buy and he should use that with a minimum of waste of precious plant food. This means that the analysis must be suited to soil and crop needs.

Fertilizer Education Has Lagged

In the 50 years that have passed under my observation the farmer has gained some information in regard to the content and use of commercial plant food, but far too little. There is still far too much mystery, and a lack of adequate understanding of fertilizer analyses and soil needs. He still thinks too much, far too much, in terms of tonnage rather than pounds of plant food per ton.

The average farmer has not had a course in chemistry and 10 years from now his chemical education will still be lacking, but he can learn the chemistry of fertilizers that he should know if all of us who are concerned make an adequate effort. He should become familiar with nitrogen, phosphoric acid and potash, the real productive forces of the fertilizer. He should know just what a 3–9–6 fertilizer furnishes his soil and, given the price of the fertilizer, he should be able to calculate the per pound cost to him of the actual plant food he is getting. Then with this knowledge before him he is in position to learn that a 4–12–8 mixture will furnish his soil with plant food in the same relationship as does the very popular 3–9–6. When he figures the unit cost of the plant food in the lower analysis and the higher analysis material, he will at once, and for all time, learn the value of using as high analysis fertilizers as practical.

Too slowly has the analysis of fertilizer crept up, and the important reason for this is that this commodity has been bought to too great an extent on a tonnage basis. It is our task to stress analysis, plant food content and change the manner of buying of this basic farm supply. Very soon farmers will see that by using higher analysis fertilizer he will be getting the essential plant food for his crops at less cost by reducing freight, bagging, tagging, and handling costs. Even as he hauls the material to his farm, takes it to the field and empties it into his fertilizer distributing machines, he will realize that he makes a saving. Of course, in many cases he will invest his money saved, as a result of the use of a higher analysis fertilizer, in more plant food for his crops and his soil.

Farmers can understand mixed fertilizers better if they know something about the important ingredients. So they should be familiarized with ammonium sulphate and its source, ammonia liquors and what an important part they are playing in reducing the cost of nitrogen. And, of course, they should know more about such materials as ammonium nitrate, nitrate of soda, superphosphate and double superphosphate, muriate of potash and sulphate of potash. Already farmers know a good deal about some of this latter list of materials. They buy much of the latter two nitrogen materials, great amounts of superphosphate and less of the double superphosphate and of the potash materials. These materials should be just as available to farmers as are mixed goods.

Let us take away some of the mystery about commercial fertilizer. Let us bring the filler skeleton out in the open and let everybody see it. Others as well as farmers need to know about filler. When a U. S. Senator and a prominent leader of organized agriculture state in public and in writing that fertilizer is 80 per cent filler, it is time for us to become evangelists and educate our public on commercial fertilizer. Let us show farmers and the public how a commercial fertilizer is put together. Then farmers will readily see why they should change from their very popular 3–9–6 to a 4–12–8, or from another very popular formula, 6–8–4, to a higher analysis material with plant food elements in the same proportion, such as 9–12–6. In both of these higher analysis materials they will see that practically all straight filler can be left out. They will soon learn that, since we now have much higher grade materials from which to make fertilizer, the lower grade materials are completely outmoded.

Nicer Adjustment of Fertilizer to Land

Nicer adjustments are needed in the use of fertilizing materials and it will be possible to make these as information in regard to soils and plant foods becomes better disseminated. These formulas that are sold for a whole region has served and continue to serve a useful purpose, but they do not fit a whole region as does the rain, the dew, or the sunshine. Adjustment must be made for different natural soils, cropping system and farm practices. The use of legumes is to be continued and increased and this must be taken into consideration in making out the fertilizer program.

(Continued on page 28)

The Use of Anhydrous Ammonia as a Source of Nitrogen

By Dr. W. B. ANDREWS

Associate Agronomist, Agricultural Experiment Station, State College, Mississippi

(Continued from the issue of December 13, 1947)

The Response of Corn and Cotton to Ammonia and Ammonium Nitrate Applied as a Side-Dressing on Dry Years. The experiments conducted with ammonia and ammonium nitrate during the first year were sidedressing tests. The ammonium nitrate was applied on the surface and plowed through with a tractor cultivator; while the ammonia was applied about five inches deep. The weather was very dry following the application of the fertilizer at most locations. The data for corn are reported in Table 1.

TABLE 1
THE RESPONSE OF CORN TO ANHYDROUS AMMONIA AND AMMONIUM NITRATE ON A DRY YEAR

Test Number	Source of Nitrogen and Depth of Application: Anhydrous Ammonia 5 inches	Ammonium Nitrate Surface
	Increase in Yield Bu. of Corn Per Acre	
1	10.8	8.2
2	5.6	2.2
3	12.5	8.6
4	13.8	4.5
5	13.4	13.0
6	6.2	3.4
7	10.0	7.2
Average	10.3	6.7

The difference in favor of ammonia over ammonium nitrate for sidedressing corn on the dry year is attributed largely to positional availability. The ammonia was applied deep enough for corn to get a reasonable amount of the nitrogen, while much of the ammonium nitrate remained on the surface where little moisture was present.

The data on the response of cotton to ammonia and ammonium nitrate on the dry year are reported in Table 2.

The difference in favor of ammonia over ammonium nitrate for cotton production on the dry year is also attributed largely to positional availability. As was the case with corn, the ammonia was applied deep enough for cotton to use it, while the ammonium nitrate in the dry surface soil was less available.

TABLE 2.
THE RESPONSE OF COTTON TO AMMONIA AND AMMONIUM NITRATE ON A DRY YEAR

Test Number	Source of Nitrogen and Depth of Application: Anhydrous Ammonia 5 inches	Ammonium Nitrate Surface
	Increase in Yield Lb. Seed Cotton Per Acre	
1	193	175
2	305[1] (242[2])	180[1] (92[2])
3	258	104
4	98	48
5	305	159
6	105	125
7	207	225
8	263	215
Average	217	154

[1] Based on one picking and boll counts
[2] One picking

The Response of Oats to Anhydrous Ammonia and Ammonium Nitrate. Nitrogen was applied to oats at the rate of 32 pounds per acre from anhydrous ammonia and ammonium nitrate. Anhydrous was superior to ammonium nitrate for fall application to oats planted for grain production, as shown by the data reported in Table 3.

Even though fall-applied anhydrous ammonia was much superior to fall-applied ammonium nitrate, it should be pointed out that spring-applied ammonium nitrate was much superior to fall-applied ammonium nitrate, as shown by the data in Table 4.

Ammonium nitrate applied in the fall was not a satisfactory source of nitrogen for the production of grain by oats on any soil, while anhydrous ammonia applied in the fall was a good source of nitrogen on many soils.

(Continued on page 24)

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Vol. 107 * DECEMBER 27, 1947 No. 13

Principal Articles in This Issue

Clark to Head Texas Gulf Sulphur Agricultural Department

S. W. Clark, entomologist and assistant agricultural department manager for the past ten years, has been promoted to the position of Agricultural Manager by the Texas Gulf Sulphur Company succeeding Alfred Fenton who passed away early this month.

Mr. Clark, a native of Lafayette, Indiana, received his Bachelor of Science degree from Purdue University and did graduate work at Iowa State University. Before coming to Texas in 1928, Clark was associated with the Wisconsin State Department of Agriculture. Prior to his coming with Texas Gulf Sulphur Company in 1938, he served for ten years as entomologist for the Texas Agricultural Experiment Station and was assigned to the Lower Rio Grande Valley Experiment Sub-Station at Weslaco, Texas.

Since coming with Texas Gulf Sulphur Company, Mr. Clark has specialized in various agricultural improvement work pointing up the value of sulphur in agriculture. Demonstrations and experiments have involved the use and application of sulphur in connection with animal parasite control, soil reclamation, insect and disease control on truck crops, deciduous fruits and citrus. Also, Clark has specialized in field crop insect and disease control and in the control of poultry disease. All of these demonstrations involved the use of sulphur in establishing improved methods of crop production and control of insects and plant diseases.

Texas Gulf Sulphur Company, through supervision of Mr. Clark, will continue its aggressive agricultural development program, according to P. George Maercky, official of Texas Gulf Sulphur Company.

"Relatively recent developments in the use of sulphur as a soil corrective and amendment and later realization of the value of sulphur as an important plant nutrient have opened up more opportunity for the farmer to capitalize on the inherent value of this locally produced mineral.

"Chemical combinations of sulphur in the organic forms are increasing the efficiency of the many and varied insecticides and fungicides which are utilized by agriculture in the lessening of the ravages of pests and diseases on farm crops and livestock".

"Mr. Clark, interested for years in soil improvement work together with keen understanding of general agricultural development, is ideally suited for this important position."

New Plant Food Picture Available for Showing

"First in the Hearts of Farmers," a new, 16mm., 24-minute sound motion picture showing some of the agricultural experiences of George Washington and his emphasis on plant food in a well-rounded land-management program, now is available for distribution to agricultural groups, farm organizations and other recognized groups, Clifton A. Woodrum, president of the American Plant Food Council which produced the film, has announced.

The premiere showing of the picture was attended by a Congressional delegation of 56 Senators and Representatives, nationally-known farm leaders and editors, U. S. D. A. officials, members of the press, radio and fertilizer industry.

The picture will be loaned for showing without charge, except for return transportation costs and insurance. Requests should contain a selection of dates for showing if possible and all correspondence and requests should be directed to the American Plant Food Council, 817 Barr Building, 910 17th Street, N. W., Washington 6, D. C.

"First in the Hearts of Farmers" begins with a picture of Washington-the-farmer as he records in his diary his concern for the "exhausted state" of his fields and "the decreasing fertility of farm lands everywhere." The picture tells of how Washington used marl, a crude limestone, to lime his fields and how he used mud from the Potomac river for the betterment of his land.

Mr. Woodrum, in describing the film, said that "while the diary of Washington inspired the production of the picture, it is more than a story of his agricultural wisdom—it is the re-echoing of the principles of present-day good land management principles with a glimpse of America's great fertilizer industry with stress on the importance of our land and how to keep it productive."

Price Increase in Chilean Nitrate of Soda

The Chilean Nitrate Sales Corporation announced that on December 17, 1947, the price on Chilean nitrate of soda would be increased to $44.50 per ton of 2,000 lb., in bulk, f.o.b. cars at the port warehouses. For delivery in 100 lb. paper bags, the price is $48.00 per ton. The above prices are for carload lots. For less than carload lots, an additional 50 cents per ton is charged, plus drayage from port warehouse to railroad station.

The above prices represent an increase of $2.00 per ton on bulk nitrate and $2.50 per ton on the bagged material.

International Plans New Potash Refinery

Another step in its long-range program of expanding into new industrial markets will be taken by International Minerals and Chemical Corporation when it begins construction of a new refinery at Carlsbad, New Mexico, for the production of chemical grade muriate of potash and improved grade of potassium sulphate.

Coincident with the construction of the new plant, refinements in the present plant facilities will be made which will result in improved recoveries and increased capacity for existing grades of potash salts.

According to Louis Ware, president of International, the new plant addition will cost in excess of $1,000,000 and will be erected adjacent to present facilities about 25 miles outside of Carlsbad. Preliminary layout design is being handled by the Western-Knapp Engineering Company of San Francisco and construction will be started as soon as possible after the contract is let, probably early next year.

The plant will utilize a new and efficient process for the production of chemical grade potassium chloride and improved grade of potassium sulphate developed by International's research staff in Carlsbad. As a result of this new process, special equipment has been designed to handle the operations in the new plant. By virtue of its output of chemical grades of potash, International will be able to serve industrial users in the potassium chemical field, most of whom are located in the eastern states. The product will also serve as the principal raw material for International's own potassium chlorate plant near Cincinnati, Ohio.

The improved grade of potassium sulphate will become available for agricultural application through its use by fertilizer manufacturers. Present industrial users of the sulphate will also benefit by the improved grade.

The new facilities will require a substantial number of employees when ready for operation in addition to the 750 persons now employed by the corporation in Carlsbad.

November Tag Sales

Sales of fertilizer tax tags in 16 States during November were equivalent to 668,000 short tons, according to reports of State control officials to The National Fertilizer Association. Sales, which were the highest for any November on record, were 26 per cent above the 529,000 tons reported for last November and 45 per cent above the 459,000 tons reported for November, 1945.

In the 11 Southern States, sales were equivalent to 476,000 tons, an increase of six per cent over last year and 33 per cent over two years ago. Compared with last November, sales were higher for six States, with increases ranging from 25 per cent for Texas to over 200 per cent for Oklahoma. For the five States whose tonnages were below last November the decreases ranged from two per cent for North Carolina to 38 per cent for Alabama.

Sales in the five Midwestern States during November, amounting to 191,000 equivalent short tons, were 134 per cent above the 82,000 tons reported for last November and 86 per cent above November, 1945. Of the five States, only Illinois failed to register an increase over a year ago; the decrease for Illinois amounted to 30 per cent. In the other four States, equivalent tonnages this November were all more than twice as great as for last November.

FERTILIZER TAX TAG SALES
COMPILED BY THE NATIONAL FERTILIZER ASSOCIATION

STATE	NOVEMBER				JANUARY–NOVEMBER		
	1947 Tons	1946 Tons	1945 Tons	% of 1946	1947 Tons	1946 Tons	1945 Tons
Virginia	20,345	21,450	37,161	99	610,665	617,670	568,877
N. Carolina	107,640	109,757	63,291	98	1,455,474	1,480,129	1,332,047
S. Carolina	81,550	62,380	34,150	100	844,239	843,400	759,410
Georgia	54,508	34,163	58,142	97	1,019,369	1,052,322	1,047,844
Florida	99,848	116,394	100,703	80	772,881	970,682	817,173
Alabama	31,585	51,200	20,350	80	653,885	817,250	685,850
Tennessee	30,709	13,605	6,388	106	337,807	318,239	273,590
Arkansas	10,369	6,800	750	106	156,648	148,350	114,150
Louisiana	11,900	13,070	10,500	87	214,603	245,788	224,010
Texas	21,115	16,830	23,343	111	368,863	330,913	215,198
Oklahoma	6,125	2,000	2,000	152	80,557	52,936	24,312
Total South	475,694	447,649	356,778	95	6,514,991	6,877,679	6,062,461
Indiana	123,669	54,313	79,591	126	715,309	565,930	488,197
Illinois	9,470	13,600	12,650	122	350,595	288,203	231,164
Kentucky	56,055	13,415	8,650	134	408,450	305,056	270,796
Missouri	1,608	185	770	88	221,344	252,163	147,404
Kansas	250	5	1,005	177	104,308	58,868	37,620
Total Midwest	191,052	81,518	102,666	122	1,800,006	1,470,220	1,175,181
Grand Total	666,746	529,167	459,444	99	8,314,997	8,347,899	7,237,642

FERTILIZER MATERIALS MARKET

NEW YORK

Holiday Lull Pervades Markets. Increased Demand for Feed Materials Raises Organics Beyond Fertilizer Range. Better Boxcar Supply Aids Material Shipments. More German Potash Arrives. Price Advance on Chilean Nitrate of Soda

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, December 24, 1947.

During the holiday season each year there is generally a lull in buying and the general markets were rather quiet.

Organics

The continued cold weather in the Western part of the country brought a renewed demand from the feed trade for certain animal by-products and they were quick to out-bid fertilizer people for the available supplies. Tankage and blood were well bought at around $10.00 to $10.50 per unit of ammonia ($12.15 to $12.76 per unit N), with the fertilizer trade showing little interest at these prices. Vegetable meals continued to rise in price and some of the large oil mills were sold ahead for several months, making available supplies not to oeasy to find. Soybean meal sold at $90.00 per ton in bulk, f.o.b. Decatur, Ill.; cottonseed meal, $96.00 per ton, Memphis; and linseed meal was sold ahead by some producers until April. Hoof meal was hard to locate with last sales at $8.75 ($10.63 per unit N), f.o.b. shipping point.

Fish Scrap

The small amount of material available was taken by the feed trade at around $160.00 per ton, f.o.b. Eastern points, and with very little going to the fertilizer trade. Offerings were scarce.

Castor Pomace

Producers are in a better position to fill existing contracts but how long this situation will last is hard to forecast, because if the demand for castor oil should fall off, the producers will cut their production.

Potash

Domestic producers were making every effort to ship potash on present contracts and the box car situation was reported to be better at most points. Some German sulphate of potash continued to arrive at several Atlantic Coast ports but it is understood this has all been sold ahead. No new arrivals are anticipated in the near future. Manufacturers in all sections of the country seem to be short of potash and the demand has increased considerably.

Superphosphate

Triple superphosphate continued in demand and the available supplies were sold ahead on contract.

Sulphate of Ammonia

Reports were current in the trade of an expected advance on January 1st by some producers to $40.00 per ton, f.o.b. production points. This has not been confirmed as yet.

Nitrate of Soda

The price of this material (Chilean) was advanced $2.00 per ton in bulk and $2.50 per ton in bags effective at once. Regular arrivals continue at various ports but the supply is still far short of requirements.

Bone Meal

Producers expect a lower production in the spring months when the expected cut in the meat supplies takes place. Most buyers are stocking up ahead so they will not be caught short.

Nitrogenous Tankage

Leading manufacturers of this material have nothing to offer and are making shipments on contract.

Ammonium Nitrate

A good part of this material is still going for export and domestic manufacturers are having trouble getting needed material. No near solution to this problem is looked for.

CHARLESTON

No Relief in Sight on Shortage of Chemical Materials. Organic Materials Increased in Price by Feed Demand

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, December 22, 1947.

All chemical nitrogenous materials are scarce and are expected to continue scarce. Superphosphate and potash also are expected to be tight for the balance of the season.

Organics.—Demand for organics from the fertilizer trade is very slack, but good interest is shown by the feed trade for such materials as blood and tankage. South American organics remain too high in price to interest fertilizer manufacturers at the present time. A little foreign nitrogenous was offered, but slight interest has been shown in this. Domestic nitrogenous remains at levels of $6.50 per unit of ammonia ($7.90 per unit N), in bulk, f.o.b. midwestern production point.

Castor Pomace.—Offerings continue to be scarce in the open market. Movement is against existing contracts.

Potash.—Distribution of potash has shown improvement since the beginning of December and producers are gradually reducing accumulated stocks.

Nitrate of Soda.—Domestic production continues hampered for lack of soda ash and a considerable portion has been allocated to industrial use. The market remains tight as demand increases. Imported material is fairly well on schedule.

Sulphate of Ammonia.—No easement is seen in buying conditions and it is expected that, due to the heavy export program, supplies will continue to be extremely tight. It is rumored that as of January 1st, there will be an advance in price from domestic producers.

Dried Ground Blood.—Interest from the feed market is strong and offerings are scarce. Price is around $10.00 per unit of ammonia (12.15 per unit N), in bulk, f.o.b. New York and $10.50 to $10.75 ($12.76 to $13.07 per unit N).

Tankage.—Limited offerings have kept trading restricted. Price is reported around $10.50 to $10.75 per unit of ammonia ($12.76 to $13.07 per unit N), for New York and Chicago.

Superphosphate.—Offerings are practically unobtainable as the market continues extremely tight. Demand continues strong, and production continues to be hampered somewhat due to shortage of sulphuric acid and difficulty of moving rock from mines to acidulators because of box car shortage.

Phosphate Rock.—The box car situation has shown some improvement but is still below normal and demand from acidulators continues strong, keeping the market in a tight condition.

PHILADELPHIA

Stocks of Mixed Fertilizers Accumulating in Plants. Advance in Chilean Nitrate Prices. Nitrogen Export Problem Serious

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, December 22, 1947.

Practically all fertilizer materials are scarce and prices are firm. It seems certain the fertilizer supply during this 1947–1948 season will be insufficient to meet requirements. Still, the farmers are *not* taking early delivery of their mixtures as they did last year and the year before. The result is that most fertilizer factories are blocked up with complete fertilizer and cannot take in further raw supplies. This creates a nominally dull current market wherein a bargain is now and then available to the mixer who does happen to have a little room. Manufacturers are

pretty generally disturbed over the domestic scarcity caused by too liberal exports, and closer supervision in this direction is being urged.

Sulphate of Ammonia.—The market is firm, with demand still ahead of supply. Prices are expected to advance about January 1st to an average $40.00 per ton, f.o.b. producing plants, in bulk.

Nitrate of Soda.—The demand continues to absorb practically all quantities available, and market position remains tight. The Chilean product has advanced in price $2.00 per ton on the bulk shipments and $2.50 per ton on the bagged article. This brings the bulk price to $44.50, and $48.00 in 100-pound paper bags, per 2,000 pounds, f.o.b. cars at port warehouse. There is an added charge for truck and boat deliveries. Prices mentioned are for carload lots. Domestic price remains unchanged, with no free market.

Ammonium Nitrate.—Supply continues exceedingly inadequate, and due to electric power cutoff in the West, the situation grows more serious as certain producers are unable to provide their full allotment for export. It is feared some other form of nitrogen, such as sulphate of ammonia, may be allocated for export to make up the shortage, thought to be several thousand tons.

Castor Pomace.—Sales have been reported at $40.00 per ton, f.o.b. producing plant, but there is no free market.

Blood, Tankage, Bone.—Trading has been rather slow with not too much material offering. There is more than normal interest by fertilizer mixers, but lack of storage space stands in the way of business, although high prices also interfere. Business is practically with feeders alone, and sales have been reported of limited quantities of blood and tankage at prices ranging from $9.50 to $10.50 per unit of ammonia ($11.55 to $12.76 per unit N). Bone meal seems to be non-existent at present.

Fish Scrap.—Offerings of meal are limited and prices asked range from $160.00 to $170.00 per ton. This remains a feeding proposition.

Phosphate Rock.—Distribution has improved with better car supply, but the demand is heavy and ahead of production.

Superphosphate.—Demand is reported well ahead of current supply, and the market position is tight. Most movement is on contracts.

Potash.—Despite recent arrivals from Europe, the supply is still short of requirements. The demand for potash in almost any form is very acute. Recent offerings of cotton burr ashes have been instantly taken up, and that article is now practically unobtainable.

CHICAGO

Demand for Organics Far Ahead of Supply with Prices Above Fertilizer Levels

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, December 20, 1947.

Active inquiry for animal organics remains unabated while the supply, as has heretofore been frequently mentioned, is lagging behind the demand.

With wet rendered unground tankage at around $10.00 to $10.50 per unit ammonia ($12.15 to $12.76 per unit N), and with unground dried blood in good demand around the same figure, f.o.b. mid-west shipping points, it is easily understood why this material cannot be profitably used in the fertilizer industry.

Davison Purchases Ia-Conda Plant

The Davison Chemical Corporation has announced the purchase of the plant and property of the Ia-Conda Phosphate and Chemical Company at Perry ,Iowa. The Perry plant will be adapted to the manufacture of the Davison brand of superphosphate and complete fertilizers. It is also planned to expand the present plant capacity.

This new plant will link up with the present Davison plants in Ohio, Tennessee and Indiana in developing the Middle West fertilizer demand. To further this aim, the Research Department of The Davison Chemical Corporation will embark upon an active program of developing plant food information as it relates to local fertilizer and soil conservation problems. Davison's policy is to work through the various state universities, established farm agencies and county agents and will follow this procedure in Iowa. It is hoped that such information will help promote better soil management practices and fertilizer usage to the end that Iowa's rich soils will retain their high level of productivity.

The Davison Chemical Corporation maintains its home office at Baltimore, Maryland. It has producing plants at Curtis Bay, Maryland; Savannah, Georgia; Bartow, Florida; Gretna, Louisiana; Nashville, Tennessee; New Albany, Indiana; Cincinnati, Columbus, and Alliance, Ohio; and Perry, Iowa.

Ralph E. Fraser, vice-president of Summers Fertilizer Co., Inc. and Northern Chemical Industries, Inc. was recently elected a Director of the New England Council of Boston, Massachusetts.

New Armour Concentrated Superphosphate Plant

The Armour Fertilizer Works has awarded the contract for the design and construction of a new concentrated superphosphate plant to the Rust Engineering Co., of Birmingham, Ala., and Pittsburgh, Pa. The plant will be located near Bartow and will be of structural steel frame with corrugated asbestos roofing and siding. The storage shed will be equipped with two bridge cranes on parallel runways of 70 ft. span and 260 ft. length.

A complete plant site will be developed in conjunction with this project, and a new railroad station known as Armour will be established. The plant will have a capacity of 75,000 tons of concentrated superphosphate per year.

Slate to Retire as Connecticut Experiment Station Head

William L. Slate, director of the Connecticut Agricultural Experiment Station for the past 24 years, will retire on December 31st. His resignation as vice-director of the Storrs Experiment Station has also been announced. The Station Board of Control has conferred upon him the title of Director Emeritus and has expressed the hope that he would long retain an interest in Station affairs.

After his graduation from Ohio State University, Mr. Slate served as assistant agronomist at the University of New Hampshire. In 1913 he was appointed Agronomist at the Storrs (Conn.) Agricultural Experiment Station. He was appointed vice-director of the Connecticut Station in 1922 and was advanced to director of that Station and vice-director of the Storrs Station in 1923. Among all the directors of Experiment Stations in the United States, he is second in years of service.

CONGRESSIONAL HEARING REVIEWS FERTILIZER SITUATION

(Continued from page 8)

pace with production. The need for transport facilities is particularly urgent during the next 90 days if agriculture's spring planting requirements are to be met.

3. Constructing, equipping and placing into production the facilities with which to produce the raw materials for the fertilizer industry has been and continues to be a slow process. Some heavy equipment is scheduled for delivery at least three years behind orders. New tank cars until recently confirmed for December, 1947, delivery have been pushed back to March, 1948, due to the steel shortage. Labor in some areas has just not been available for expansion progress, Lockwood said.

As the best means of increasing production of nitrogen fertilizers, Mr. Lockwood urged the transfer of Army Ordnance nitrogen plants to commercial operators, in such a manner that commercial operators may soundly integrate their operation with nitric acid and graining units located near each of the ammonia fixation plants.

A Government report that the operation of Army-owned nitrogen plants to supply export requirements has lessened the drain on domestic supplies is incorrect, he declared.

The facts show that part, if not all, of the current ordnance nitrogen fixation capacity would have been in use for commercial domestic production before now had these plants been made available to private operators through purchase or lease.

Any further allocation of nitrogen and nitrogenous materials to European countries will cut directly into domestic supplies, Lockwood declared in a review of the supply and demand outlook.

Without any additional export allocations under any plan adopted to aid Europe or other foreign areas, we are already committed to ship 28 per cent of the total United States nitrogen supply during the 1947–48 year, or 10 per cent more than during the 1946–47 year.

If the fertilizer provisions of the general report of the Committee on European Economic Co-operation are accepted, exporting countries must furnish to participating countries 440,000 metric tons of nitrogen in 1947–48. This is approximately 270,000 tons more than has already been allocated to them and must cut directly into supplies for United States agricultural uses.

"Certainly none of our industry wishes to discover some years from now that we have been unfairly selfish internationally, but neither will we care to look back and realize that we have distributed fertilizer supplies unwisely," Lockwood declared.

Mr. Lockwood also filed short statements from more than 20 manufacturers and fertilizer materials, summarizing the current fertilizer situation in different parts of the country

North Carolina Asks for More Fertilizer

A few elements of discord came in connection with distribution and transportation. Farmers from North Carolina came to town, and through their spokesmen said that they were not getting as much fertilizer as they would like to have; in fact, not even as much as they got in former years. On the basis of increased production figures, given by the manufacturers, they wanted to know why it was that their "allocations" had been cut. The answer was not long in coming.

Officials of the industry explained that, before the war, the primary demand for com-

mercial fertilizers came from the Atlantic Seaboard and Gulf Coast States. But, with the added drain on soil resources brought on by the war goals, farmers in other parts of the land have found the value of fertilizer, and they are now bidding for their just share of it. That's why, said the officials, farmers in the traditional fertilizer consuming areas sometimes find that they can't get even as much as they got during the war. Production has increased, but demand has increased much faster, and they are spreading a greater amount over a vastly increased area—leaving those who formerly got most of the available supplies with less than they used to get.

More Box Cars Promised

The transportation difficulties came up in connection with the boxcar and tank car shortages. Privately owned factories making fertilizer materials testified that, even if their plant expansion could keep pace with demand, the transportation bottleneck would still keep them from delivering it. An official of the American Association of Railroads then testified that the roads expect the "10,000 cars a month" program to be realized by January of next year, if not sooner, and that this would amount to a net increase of some 5,000 cars a month. That means, of course, that there will be enough cars to replace all those junked each month, and 5,000 to spare— which should aid materially in solving the shortage.

The hearings ended on a very friendly note all around, with all sides agreed that we are witnessing the gradual solution of a gigantic problem through the mechanism of free enterprise, with respect to the fertilizer situation. The unusual situation created by multiplying demand, at a time when shortages of all kinds exist, has resulted in a time-consuming process of meeting the demand. Big plants to produce more fertilizer take time to build; materials for building them, and labor, are hard to come by. More than 75 new plants are either just going into operation, or were in the process of construction this calendar year. Extensions to 44 existing plants are being made. Many of these new factories are located in the great farming areas which, until a few years ago, did not depend on fertilizers to raise their crops. The prospects for the future indicate that undreamed-of consumption of these materials will be commonplace before long. But while these facilities are being built, farmers everywhere are going to have to watch their supplies very closely, and use them wisely.

ANHYDROUS AMMONIA

(Continued from page 11)

Fall-applied ammonia was a good source of nitrogen on strongly acid soils where the rate

TABLE 3.

THE RESPONSE OF OATS TO AMMONIA AND AMMONIUM NITRATE APPLIED IN THE FALL

Test Number	Source of Nitrogen: Anhydrous Ammonia	Source of Nitrogen: Ammonium Nitrate
	Increase in Yield Bu. Oats Per Acre	
1	30	16
2	32	15
3	30	16
4	29	20
5	19	10
6	25	15
7	12	8
8	15	8
9	14	10
10	4	5
Average	21	12

TABLE 4.

THE RESPONSE OF OATS TO FALL- AND SPRING-APPLIED AMMONIUM NITRATE

Test Number	Time of Application of Ammonium Nitrate: Spring	Time of Application of Ammonium Nitrate: Fall
	Increase in Yield Bu. of Oats Per Acre	
1	21	16
2	25	15
3	25	16
4	27	20
5	20	10
6	30	15
7	19	8
8	22	8
9	24	10
10	24	5
Average	24	12

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THE strategic factory locations of The American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Bone Ash, Bone Oil, Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Carbonate, Ammonium Fluosilicate, Magnesium Fluosilicate, Potassium Fluosilicate, Phosphorus Pentasulphide, Phosphorus Sesquisulphide (lump), Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.

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Cleveland, Ohio
Detroit, Mich.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Montgomery, Ala.
Nat. Stockyards, Ill.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
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Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
Savannah, Ga.
Spartanburg, S. C.
Wilmington, N. C.

of nitrification was slow:

Number of tests	5	5
pH of Soils	5.1 or lower	5.5 or higher
Rate of Nitrification	Slow	Fast
Increase in yield (bu. oats per acre)		
Anhydrous ammonia—fall	28	14
Ammonium Nitrate—spring	24	24

The fall application of ammonia was made in October. The spring application of ammonia was usually made in February or March. Where the rate of nitrification of ammonia was slow, the soil was able to retain the ammonia until spring; where the rate of nitrification was high, much of the ammonia was apparently converted into the nitrate form which is subject to leaching.

On one soil with a pH of 4.95 the following data were obtained:

Source of Nitrogen	Time of Application	Increase in yield Bu. Oats Per Acre
Anhydrous Ammonia	October	29
Aqua Ammonia	January	30
Ammonium Nitrate	March	27

On this acid soil, October and January were satisfactory dates for applying ammonia.

On one soil with a pH of 5.1 the following data were obtained:

Source of Nitrogen	Time of Application	Increase in Yield Bu. Oats Per Acre
Anhydrous Ammonia	October	19
Anhydrous Ammonia	March	10
Ammonium Nitrate	March	20

The acidity of this soil was such that nitrification was slow and fall-applied ammonia was equal to spring-applied ammonium nitrate. March-applied ammonia produced one-half the increase in yield of oats as the spring-applied ammonium nitrate or fall-applied ammonia.

Young oats apparently use ammonium and nitrate nitrogen equally well. Based upon the above data and observations, fall-planted oats do not use nitrogen in the ammonium form in the spring. When ammonia is applied in the spring, it is necessary to apply it early enough for considerable nitrates to be available when early growth starts in the spring, which of course will vary with the reaction of the soil.

On one soil with a pH of 7.8 the following data were obtained with oats:

Source of Nitrogen	Time of Application	Increase in Yield Bu. Oats Per Acre
Anhydrous Ammonia	October	9
Anhydrous Ammonia	March	25
Ammonium Nitrate	March	24

The ammonia was converted into nitrates rapidly on this soil; October application of ammonia was unsatisfactory, while March application was satisfactory.

Ammonia may be applied and sealed in the soil satisfactorily before planting oats; however, sealing ammonia presents a problem in topdressing oats. More work is needed on this phase of the investigations. The application of ammonia as a topdressing for small grains is not recommended as being entirely satisfactory; however, it is anticipated that many farmers will try it out and that they may learn to do it satisfactorily.

In the above tests with oats, nitrogen was applied at the rate of 32 pounds of nitrogen per acre. The ammonium nitrate was applied broadcast. The ammonia was applied in bands 16 inches apart.

Ammonia was equal to, or slightly superior to, ammonium nitrate for fall and winter forage production in three tests. The ammonia was applied in bands 12 inches apart. Nitrogen was applied at the rates of 32 and 64 pounds per acre on oats planted in the last week in September. The oats used most of the nitrogen, and produced nearly all of the forage by the first week in December.

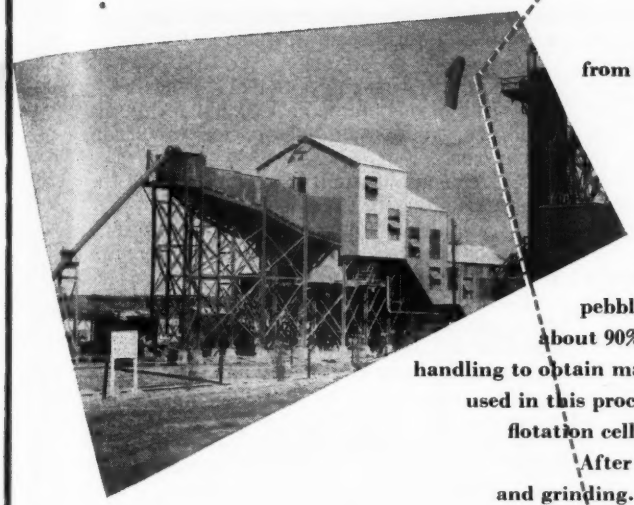
Though the evidence is indirect, it appears that ammonia will be superior to ammonium nitrate for the production of both forage and grain where more nitrogen is applied in the fall than is used by early winter. The superiority of ammonia over ammonium nitrate would be due to a better carry-over of unnitrified ammonia.

It has been observed that fall-applied nitrogen prevents heaving of oats. The nitrogen increases the root growth sufficiently to prevent the oats from being lifted out of the ground by the ice.

Choice Between Anhydrous and Aqua Ammonia

Aqua ammonia and anhydrous have equal

HOW INTERNATIONAL RECOVERS LIFE-GIVING PHOSPHATE ROCK AT ITS FLORIDA OPERATIONS

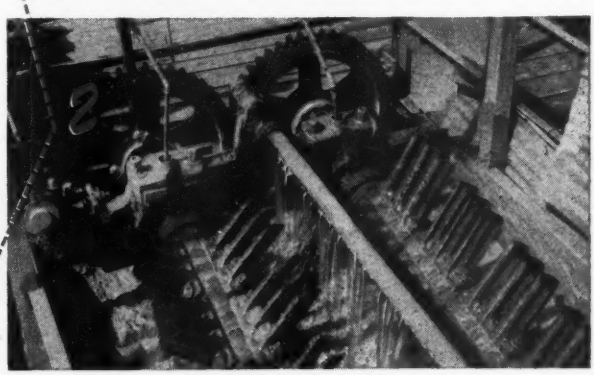


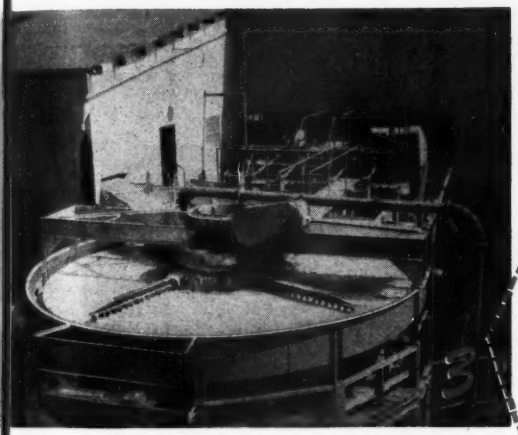
Phosphate rock matrix is pumped directly from the mine field through pipelines to the top of washer plant as shown in photo No. 1.

It then passes through the log washer (photo No. 2) where paddles and additional water reduce it to a slurry of pebbles, sand and water.

This slurry passes over screens which separate pebbles as to size. The smaller pebbles, representing about 90% of total phosphate intake, require extensive handling to obtain maximum recovery. Equipment used in this process includes classifiers, (photo No. 3) tables, flotation cells and huge, outdoor settling tanks.

After recovery, the phosphates are then ready for drying and grinding.

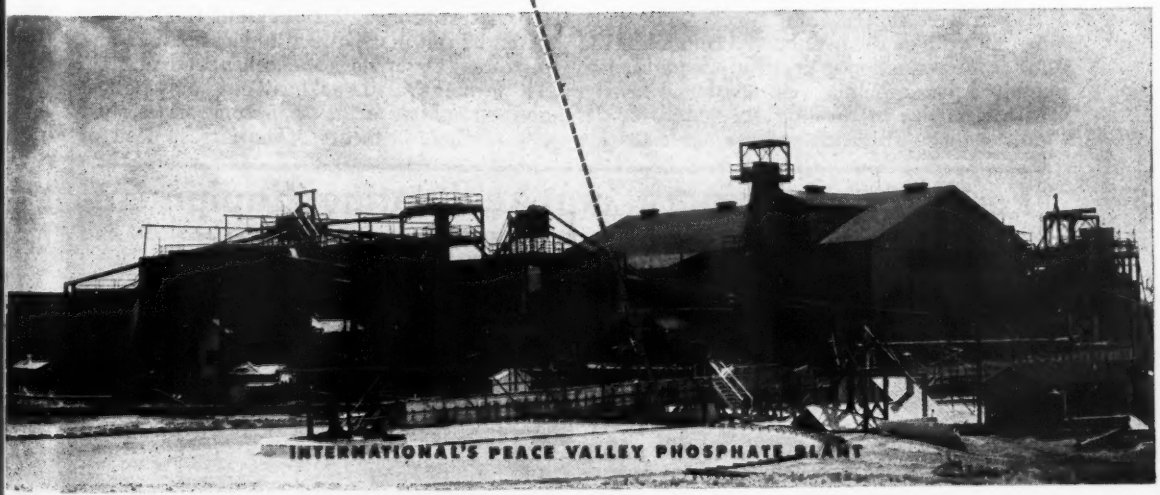




PHOSPHATE DIVISION **International** MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

This is the second in a series of 3 pictorial descriptions showing primary operations in the Mining, Recovery and Preparation of International Phosphate Rock for use in industry and agriculture.



INTERNATIONAL'S PEACE VALLEY PHOSPHATE PLANT

value for crop production. The determining factor in the choice of these two products is one of cost applied to the land. The factors which determine costs are: (1) wholesale price, (2) freight, (3) retailers margin, (4) storage costs, (5) local transport costs, and (6) cost of application. With a given set of conditions, the approximate cost of each may be calculated. However, the use of both is so new that the storage and distribution pattern has not been established. It is probably entirely safe to say that anhydrous ammonia was cheaper this year than aqua ammonia could have been.

Equipment for Handling Ammonia

Un-refrigerated tanks for storing and transporting anhydrous ammonia should have a working pressure of 200 pounds per square inch (or more), and provisions for shading, sprinkling, or insulation should be made for extremely hot weather. Provision is made for the necessary safety features. Horton spheres are probably the cheapest containers for storage of large quantities of anhydrous ammonia. Aqua ammonia tanks should have a working pressure of 10 pounds per square inch.

Anhydrous ammonia is metered by means of a differential pressure regulating valve, or by means of a needle valve and pressure gauge. The pressure gauge setting varies as the tank pressure varies. Tables are provided in the references cited for obtaining the desired rate of nitrogen from anhydrous ammonia with different tank pressures and tractor speeds. In experimental work anhydrous ammonia is metered by means of a rotameter.

Aqua ammonia is metered by means of a metering pump which is geared to the tractor.

Both aqua and anhydrous ammonia are applied in the soil by means of a knife-type opener or other suitable devices, and covered with disc hillers, sweeps, or other plows being used.

Summary and Conclusions

Data were reported for three years experimental work on the use of anhydrous ammonia for crop production. The equipment used to apply aqua ammonia was mentioned briefly, with reference to the literature cited for details of its construction and use. Information gained from the first year's experience in using it on a farm scale was also included.

The information shows that:

1. Anhydrous ammonia is equal to, or superior to, ammonium nitrate for row crop production.
2. Deep application of nitrogen used for sidedressing on dry years is essential.
3. Anhydrous ammonia is a satisfactory source of nitrogen for oats; however, there are problems in using it for topdressing.
4. The choice between anhydrous and aqua ammonia depends upon total cost applied to the land.
5. Satisfactory equipment has been developed for applying both aqua and anhydrous ammonia.
6. About 200,000 acres of row crops have been fertilized with anhydrous ammonia this year, most of which was in Mississippi.
7. Anhydrous ammonia may be applied in combination with other cultural operations.

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GETTING FERTILIZER FACTS TO THE PUBLIC

(Continued from page 10)

Livestock manures are a factor in farm fertilization and call for the proper adjustment in the use of commercial plant food.

Agriculture cannot expect the fertilizer manufacturer to prepare a formula for each farm and, in fact, it is desirable to reduce the number of formulas to as low a figure as is possible. But the better informed farmer can buy superphosphate, a straight potash fertilizer and the most suitable nitrogen fertilizing material to use to better adjust the mixed fertilizer to his soil and crop needs. Often he can make direct application of some of these materials to excellent advantage. The farmer's alfalfa field will need only potash and phosphoric acid, or in some cases, just one of these elements. The largest need of

most pasture lands, and in many cases the only need, will be for phosphoric acid, and in others the need will be just as great for potash. Where stable manure is used liberally, the use of nitrogen and potash will be made more moderate. At times the use of one of these materials may be eliminated, but the use of phosphoric acid will be relatively greater.

Filler

As farmers learn more fully to appreciate the better values in higher analysis fertilizers, "filler" should largely disappear from the trade and from our vocabulary. Material that is used purely to improve the physical condition of the fertilizer should not be regarded as filler but as a conditioner. The same is true of material that is advisedly used to alkalize the fertilizer. Just enough and no more of these two kinds of material are not fillers, but serve definite useful purposes.

Manufacturers will stay away from these conditioners as fully as is consistent with good fertilizer manufacturing practice. The use of these materials adds to the cost of the nitrogen, phosphoric acid and potash content. As farmers advance further with their liming programs, the need for alkalizing material will decrease and this suggests the possibility of the need for mixtures with and without alkalizing materials in them. But as this would add to the number of formulas manufactured, it may not be practical. However, there should be some way for the farmer who does not need dolomite in his fertilizer mixture, to get the kind of plant food that he needs without paying the cost of this alkalizing material.

Proposed Fertilizer Legislation

The need for getting fertilizer facts to farmers is expressed in more than one bill that has been introduced in the Congress. These bills would provide the authority and the funds to place an agricultural worker in every agricultural county in the country for the express purpose of increasing fertilizer education and to promote better and larger use. This is the best part of the bills, and if they stopped there, certainly the opposition would be much less. But the bills go further and provide fertilizers to approximately two per cent of the farmer demonstrators in all of the agricultural counties of the United States. This is an uncalled-for subsidy to a selected few and has political implications that are most undesirable. This part of the bills never should be passed. The American farmer can be educated on the know how of fertilizer use without using this very bad method. In fact, the rank and file can be more effectively reached by methods that attempt to reach all farmers on the same basis.

However, the very worst part of these bills calls unnecessarily for the entry of the Government still further into the business of manufacturing and distributing commercial fertilizer. To my way of thinking there is no justification for such an invasion.

But if we ask that the fertilizer problem be left with us just about as we have it now, we have the challenge to go forward. We must see that the farmer gets his fertilizing materials at as low cost as is consistent with fair profits. Let us take away the mystery and tell the fertilizer story. Let us make a larger use of dealers to tell the story about plant food. Some time might well be spent on dealer education. The story that the fertilizer companies tells farmers might apply itself more directly to the task of education. Our experiment stations possibly might help with the problem by some simplification. The extension departments of the colleges, the vocational agricultural teachers, the Soil Conservation Service, and supervisors of Farm and Home Administration likely can redirect their efforts so that they can help much more with this most complicated and most vital problem of the farm, the conservation and wise use of the soil, and its fertilization.

The Press

Finally I come to the press. Through the county press the colleges have a fine opportunity for promoting education as to the handling of soils and the use of fertilizers, that they are failing to make full use of. Too, the farm press can increase its efforts to get fertilizer facts to the public. This can be done by carrying as much educational matter on plant nutrition and soil building as space will permit, and by supporting editorially all sound fertilizer programs.

BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

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Lion Oil Co., El Dorado, Ark.
Spencer Chemical Co., Kansas Cy, Mo.

BAG MANUFACTURERS—Burlap
Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Mente & Co., Inc., New Orleans, La.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Mente & Co., Inc., New Orleans, La.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Paper
Bagpak, Inc., New York City
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hammond Bag & Paper Co., Welisburg, W. Va.
Jaite Company, The, Jaite, Ohio
Raymond Bag Co., Middletown, Ohio
St. Regis Paper Co., New York City

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Huber & Company, New York City
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
St. Regis Paper Co., New York City
Union Special Machine Co., Chicago, Ill.

BAG PRINTING MACHINES
Schmutz Mfg. Co., Louisville, Ky.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, The, East Point, Ga.
Exact Weight Scale Co., Columbus, Ohio
St. Regis Paper Co., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

BONE BLACK
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City

BONE PRODUCTS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

BUCKETS—For Hoists, Cranes, etc.
Hayward Company, The, New York City

BUCKETS—Elevator
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARS AND CARTS
Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind

CHEMICALS
American Agricultural Chemical Co., New York City
American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Commercial Solvents Corp., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Spencer Chemical Co., Kansas City, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CONDITIONERS
American Limestone Co., Knoxville, Tenn.
Jackle, Frank R., New York City.
Keim, Samuel D., Philadelphia, Pa.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

CYANAMID
American Agricultural Chemical Co., New York City
American Cyanamid Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City

DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER (Mixed) MANUFACTURERS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
International Minerals and Chemical Corporation, Chicago, Ill.
International Minerals & Chemical Corporation, Chicago, Ill.
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

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Sturtevant Mill Company, Boston, Mass.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Southern States Phosphate & Fertilizer Co., Savannah, Ga.

INSECTICIDES
American Agricultural Chemical Co., New York City
McLaughlin Gormley King Co., Minneapolis, Minn.

LIMESTONE
American Agricultural Chemical Co., New York City
American Limestone Co., Knoxville, Tenn.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Longview-Saginaw Lime Works, Inc., Birmingham, Ala.
McIver & Son, Alex. M., Charleston, S. C.

LOADERS—Car and Wagon
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Ammoniating
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Elevating and Conveying
Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Hayward Company, The, New York City
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Pulverizing Machinery Co., Summit, N. J.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sedberry, Inc., J. B., Franklin, Tenn.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Material Handling
Atlanta Utility Works, The, East Point, Ga.
Hayward Company, The, New York City
Hough Co., The Frank G., Libertyville, Ill.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Mixing, Screening and Bagging
Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Power Transmission
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Superphosphate Manufacturing
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.

MIXERS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

NITRATE OF SODA
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Il.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

NITROGEN SOLUTIONS
Lion Oil Company, El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J. New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.

PHOSPHATE ROCK
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Empire Chemical Corp., Seattle, Wash.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Il l
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Virginia-Carolina Chemical Corp., Richmond, Va.

PLANT CONSTRUCTION—Fertilizer and Acid
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Tilestad Corporation, Nicolay, New York City

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
Schmaltz, Jos. H., Chicago, Ill.

POTASH SALTS—Manufacturers
American Potash and Chem. Corp., New York City
Potash Co. of America, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
United States Potash Co., New York City

PRINTING PRESSES—Bag
Schmutz Mfg. Co., Louisville, Ky.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SCALES—Including Automatic Bagging
Atlanta Utility Works, The, East Point, Ga.
Exact Weight Scale Co., Columbus, Ohio

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Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SULPHATE OF AMMONIA
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

SULPHUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City

SULPHURIC ACID
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicaro, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
International Minerals & Chemical Corporation, Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

TAGS
Keener Mfg. Co., Lancaster, Pa.

TANKAGE
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Schmaltz, Jos. H., Chicago, Ill.

VALVES
Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

Alphabetical List of Advertisers

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SOUTHERN SALES OFFICE . . Candler Building, Atlanta, Ga.

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